AIR QUALITY ASSESSMENT

Quarry Creek Mixed Use Development
City of Carlsbad, CA

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October 5, 2012

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EXECUTIVE SUMMARY

This air quality impact study has been completed to determine air quality impacts (if any) associated with the development of the proposed development. The proposed Project site is located within city of Carlsbad and seeks to construct a 656 unit residential development, a 2.5 acre nature/education center, a 1.5 acre community facilities site (daycare), a 1.3 acre park and ride site, and preserve 72 acres of open space. All phases (i.e. mass grading, trenching, finish grading and construction) of the proposed Project are anticipated to start in 2014 with construction and opening of the first buildings sometime late 2015 and full Buildout in 2018.

During construction of the proposed Project, fugitive dust emissions will be expected during grading, heavy equipment usage, and from construction workers commuting to and from the site. During short-term construction activities, the Project would exceed Particulate Matter (PM_{10} and $PM_{2.5}$) thresholds established by the San Diego Air Pollution Control District (SDAPCD) and will require mitigation. It was found that the following mitigation measures reduced construction impacts to less than significant.

1. *Apply water during grading/grubbing and blasting activities to all active disturbed areas at least twice daily (Assuming a 51% control efficiency).*
2. *Apply non-toxic soil stabilizers according to manufacturer's specification to all inactive construction areas (Previously graded areas inactive for ten days or more)*
3. *Apply water to all onsite unpaved roadways at least two times daily (Assuming 51% control efficiency).*
4. *Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).*

A screening-level health risk assessment was conducted to determine the potential for the Project to result in a significant impact on nearby sensitive receptors during short-term construction activities. For purposes of this analysis, the primary pollutant of concern is diesel particulate matter (DPM) which is emitted by the operation of heavy diesel equipment during construction activities. The result of the health risk assessment indicates that the proposed Project would note increase the cancer risk to above one in one million and would not be considered an impact

The project would also comply with the Regional Air Quality Strategy (RAQS) and the State Implementation plan (SIP) given the proposed project would not create any operational impacts (Direct or Cumulative) and would not be considered significant.

Finally, the proposed Project would not be expected to generate offensive odors and would therefore not impact any sensitive receptors.

1.0 INTRODUCTION

1.1 Purpose of this Study

The purpose of this Air Quality study is to determine potential air quality impacts (if any) that may be created by construction, area or operational emissions (short term or long term) from the proposed Project. Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

1.2 Project Location

The project site is located south of and adjacent to State Route 78 just west of College Boulevard, within the northern portion of the City of Carlsbad CA. Access to the Project site is provided by Marron Road and Haymar Drive from College Blvd to the east of the project site. State Route 78 to College Blvd south provides regional access to the Project site. A general project vicinity map is shown in Figure 1–A on the following page.

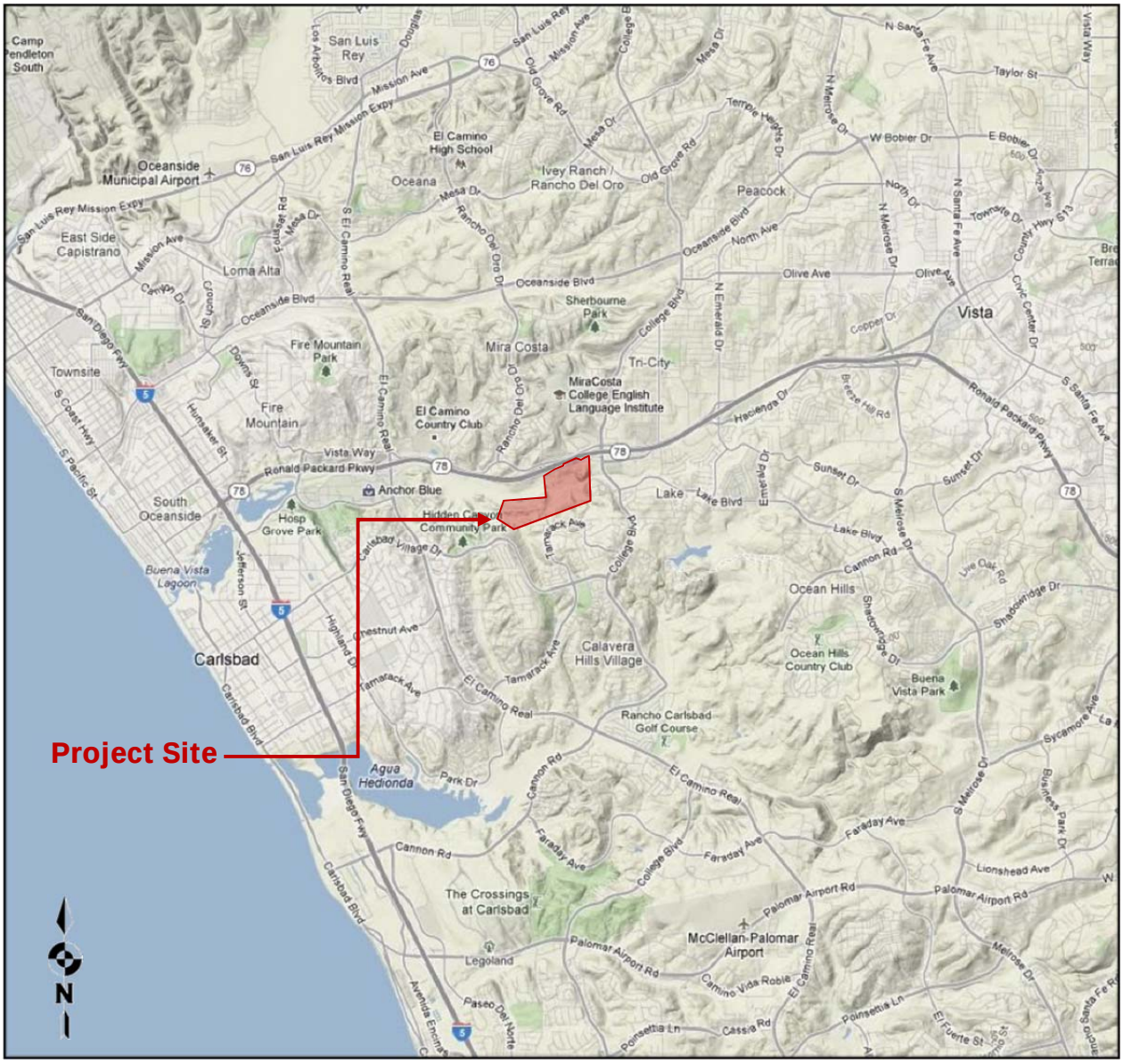
1.3 Project Description

The project consists of a 656 unit residential development, a 2.5 acre nature/education center, a 1.5 acre community facilities site (daycare), a 1.3 acre park and ride site, and 72 acres of open space. High density residential (20 units per acre minimum) is proposed on the northerly side of the creek and residential medium high density (12 units per acre minimum) is proposed on the southerly side of the creek. The proposed project site, which is 155.38 acres, is shown in Figure 1–B on Page 3.

Grading of the proposed project will disturb roughly 74 acres of the 155.38 acre project site and would consist of clearing/grubbing, mass and finish grading and would be expected to last approximately five (5) months long. As part of that work, the project engineer also expects that blasting operations will be necessary. The blasting operations would occur over a 10-day period with seven days of rock drilling and three days of blasting. During this operation, grading operations will occur simultaneously. It's expected that the balanced earthwork quantities will be 610,000 CY with 27,000 CY developed from blasting.

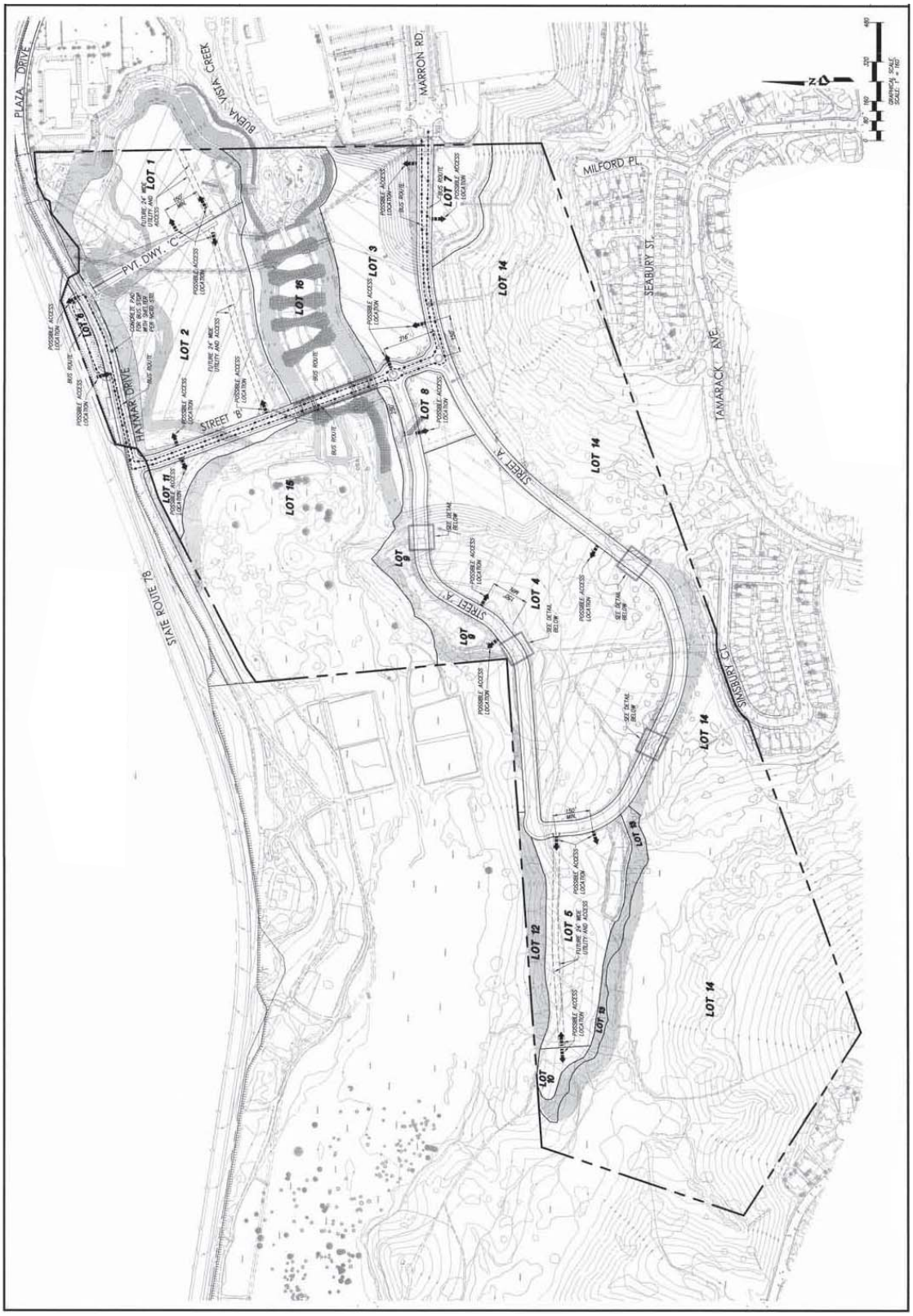
After grading is complete, the project would start the trenching operations for wet and dry utilities and would last approximately 225 working days following with the commencement of building construction which would begin a three year process of building out the remainder of the proposed development.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 8/12

Figure 1-B: Proposed Project Site Plan



2.0 EXISTING ENVIRONMENTAL SETTING

2.1 Existing Setting

The Project site lies in the northern portion of Carlsbad just south of State Route 78 (SR 78) which is also located in the San Diego Air Basin (SDAB). The site is generally represented by a diverse topography with elevations ranging from 80 feet to approximately 320 feet above mean sea level. Currently, the 155.38-acre site is mostly disturbed. Land uses surrounding the project site are mostly residential to the south and commercial/industrial to the east and west. The Project site is bordered by SR 78 to the north.

2.2 Climate and Meteorology

Climate within the SDAB area often varies dramatically over short geographical distances with cooler temperatures on the western cost gradually warming to the east as prevailing winds from the west heats up. Most of southern California is dominated by high-pressure systems for much of the year, which keeps San Diego mostly sunny and warm. Typically, during the winter months, the high pressure system drops to the south and brings cooler, moister weather from the north. It is common for inversion layers to develop within high-pressure areas, which mostly define pressure patterns over the SDAB. These inversions are caused when a thin layer of the atmosphere increases in temperature with height. An inversion acts like a lid preventing vertical mixing of air through convective overturning.

Meteorological trends within the Carlsbad area generally are very similar to that of nearby Oceanside where daytime highs typically range between 66ºF in the winter to approximately 79ºF in the summer with August usually being the hottest month. Median temperatures range from approximately 55ºF in the winter to approximately 72ºF in the summer. The average humidity is approximately 66% in the winter and about 73% in the summer (Source: http://www.city-data.com/city/Carlsbad-California.html). Carlsbad usually receives approximately 10.4-inches of rain per year with February being the wettest month (Source: http://www.weather.com /weather/wxclimatology/monthly/graph/USCA0182).

2.3 Regulatory Standards

2.3.1 Federal Standards and Definitions

The Federal Air Quality Standards were developed per the requirements of The Federal Clean Air Act, which is a federal law that was passed in 1970 and further amended in 1990. This law provides the basis for the national air pollution control effort. An important element

of the act included the development of national ambient air quality standards (NAAQS) for major air pollutants.

The Clean Air Act established two types of air quality standards otherwise known as primary and secondary standards. ***Primary Standards*** set limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children and elderly. ***Secondary Standards*** set limits to protect public welfare to include the protection against decreased visibility, damage to animals, crops, vegetation and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for principal pollutants, which are called "criteria" pollutants. These pollutants are defined below:

1. ***Carbon Monoxide (CO):*** *is a colorless, odorless, and tasteless gas and is produced from the partial combustion of carbon-containing compounds, notably in internal-combustion engines. Carbon monoxide usually forms when there is a reduced availability of oxygen present during the combustion process. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen.*
2. ***Lead (Pb):*** *is a potent neurotoxin that accumulates in soft tissues and bone over time. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children.*
3. ***Nitrogen Dioxide (NO_2):*** *is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract and is one of the nitrogen oxides emitted from high-temperature combustion, such as those occurring in trucks, cars, power plants, home heaters, and gas stoves. In the presence of other air contaminants, NO_2 is usually visible as a reddish-brown air layer over urban areas. NO_2 along with other traffic-related pollutants is associated with respiratory symptoms, respiratory illness and respiratory impairment. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children.*
4. ***Particulate Matter (PM_{10} or $PM_{2.5}$):*** *is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary in shape, size and chemical composition, and can be made up of multiple materials such as metal, soot, soil, and dust. PM_{10} particles are 10 microns (µm) or less and $PM_{2.5}$ particles are 2.5 (µm) or less. These particles can contribute significantly to regional haze and reduction of visibility in California. Exposure to PM levels*

exceeding current air quality standards increases the risk of allergies such as asthma and respiratory illness.

5. ***Ozone (O_3)**: is a highly oxidative unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to ozone above ambient air quality standards can lead to human health effects such as lung inflammation, tissue damage and impaired lung functioning. Ozone can also damage materials such as rubber, fabrics and plastics.*

6. ***Sulfur Dioxide (SO_2)**: is a gaseous compound of sulfur and oxygen and is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.*

2.3.2 State Standards and Definitions

The State of California Air Resources Board (CARB) sets the laws and regulations for air quality on the state level. The California Ambient Air Quality Standards (CAAQS) are either the same as or more restrictive then the NAAQS and also restrict four additional contaminants. Table 2.1 on the following page identifies both the NAAQS and CAAQS. The additional contaminants as regulated by the CAAQS are defined below:

1. ***Visibility Reducing Particles**: Particles in the Air that obstruct the visibility.*

2. ***Sulfates**: are salts of Sulfuric Acid. Sulfates occur as microscopic particles (aerosols) resulting from fossil fuel and biomass combustion. They increase the acidity of the atmosphere and form acid rain.*

3. ***Hydrogen Sulfide (H_2S)**: is a colorless, toxic and flammable gas with a recognizable smell of rotten eggs or flatulence. H_2S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. Usually, H_2S is formed from bacterial breakdown of organic matter. Exposure to low concentrations of hydrogen sulfide may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Brief exposures to high concentrations of hydrogen sulfide (greater than 500 ppm) can cause a loss of consciousness and possibly death.*

4. ***Vinyl Chloride**: also known as chloroethene and is a toxic, carcinogenic, colorless gas with a sweet odor. It is an industrial chemical mainly used to produce its polymer, polyvinyl chloride (PVC).*

Table 2.1: Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Average Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.075 ppm (147 µg/m3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		-		
Fine Particulate Matter PM2.5	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	15 µg/m3		
Carbon Monoxide (CO)	8 hour	9.0 ppm (10mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m3)	-	Non-Dispersive Infrared Photometry
	1 hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m3)		-	-	-
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)[8]	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m3)		0.100 ppm[8]	-	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.30 ppm (for Certain Areas)	-	Ultraviolet Flourescence; Spectrophotometry (Pararoosaniline Method)[9]
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm (for Certain Areas)	-	
	3 Hour	-		-	0.5 ppm (1300 µg/m3)	
	1 Hour	0.25 ppm (655 µg/m3)		75 ppb (196 µg/m3) (See Footnote 9)	-	
Lead[10]	30 Day Average	1.5 µg/m3	Atomic Absorption	-		-
	Calendar Quarter			1.5 µg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average			0.15 µg/m3		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07 -30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape				
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing articles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the EPA standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008
12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (2/17/12)

2.3.3 Regional Standards

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the NAAQS and CAAQS. Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as "non-attainment areas" for that pollutant. Currently, there are 15 non-attainment areas for the federal ozone standard and two non-attainment areas for the $PM_{2.5}$ standard. The state therefore created the California State Implementation Plan (SIP), which is designed to provide control measures needed for California Air basis to attain ambient air quality standards.

The San Diego Air Pollution Control District (SDAPCD) is the government agency which regulates sources of air pollution within San Diego County. Therefore, the SDAPCD developed a Regional Air Quality Strategy (RAQS) to provide control measures to try to achieve attainment status. Currently, San Diego is in "non-attainment" status for federal O_3 and the State PM_{10} and $PM_{2.5}$ however, an attainment plan is only available for O_3. The RAQS was adopted in 1992 and has been updated as recently as 2009 which was the latest update incorporating minor changes to the prior 2004 update.

The RAQS is largely based on population predictions by the San Diego Association of Governments (SANDAG). Projects that produce less growth than predicted by SANDAG would generally conform to the RAQS and projects create more growth than projected by SANDAG may create a significant impact assuming the project either produces unmitagble emission generation in excess of the regional standards. Also the project would be considered a significant impact if the project produces cumulative impacts.

The 2009 update mostly clarifies and enhances emission reductions by implementing new VOC and NOX reduction measures. The criteria pollutant standards are generally attained when each monitor within the region has had no exceedances during the previous three calendar years. A complete listing of the current attainment status with respect to both federal and state nonattainment status by pollutants for San Diego County is shown in Table 2.2 on the following page.

Table 2.2: San Diego County Air Basin Attainment Status by Pollutant

San Diego County Air Basin Attainment Status by Pollutant			
Pollutant	Average Time	California Standards	Federal Standards
Ozone (O_3)	1 Hour	Non-attainment	No Federal Standard
	8 Hour		Basic Non-attainment
Respirable Particulate Matter (PM10)	24 Hour	Non-attainment	Unclassified[1]
	Annual Arithmetic Mean	No State Standard	Unclassified[2]
Fine Particulate Matter PM2.5	24 Hour	No State Standard	Attainment
	Annual Arithmetic Mean	Non-attainment	Attainment
Carbon Monoxide (CO)	8 hour	Attainment	Maintenance Area[3]
	1 hour		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	No State Standard	Attainment
	1 Hour	Attainment	No Federal Standard
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	No State Standard	Attainment
	24 Hour	Attainment	Attainment
	1 Hour	Attainment	No Federal Standard
Lead	30 Day Average	Attainment	No Federal Standard
	Calendar Quarter	No State Standard	Attainment
Visibility Reducing Particles	8 Hour (10AM to 6PM, PST)	Unclassified	No Federal Standard
Sulfates	24 Hour	Attainment	No Federal Standard
Hydrogen Sulfide	1 Hour	Unclassified	No Federal Standard

1. Data reflects status as of March 19, 2009.

2. Unclassified; indicates data are not sufficient for determining attainment or nonattainment.

3. Maintenance Area (defined by U.S. Department of Transportation) is any geographic region of the United States previously designated nonattainment pursuant t o the CAA Amendments of 1990 and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under section 175A of the CAA, as amended.

2.4 California Environmental Quality Act (CEQA) Significance Thresholds

The California Environmental Quality Act has provided a checklist to identify the significance of air quality impacts. These guidelines are found in Appendix G of the CEQA guidelines and are as follows:

AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:

A: Conflict with or obstruct implementation of the San Diego Regional Air Quality Strategy (RAQS) or applicable portions of the State Implementation Plan (SIP)?

B: Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

C: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable Federal or State ambient air quality standard (PM10, PM2.5 or exceed quantitative thresholds for O3 precursors, oxides of nitrogen [NOX] and Volatile Organic Compounds [VOCs])?

D: Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations?

E: Create objectionable odors affecting a substantial number of people?

2.5 SDAPCD Rule 20.2 – Air Quality Impact Assessment Screening Thresholds

The SDAPCD has established thresholds in Rule 20.2 for new or modified stationary sources however the City's or County's Guidelines for Determining Significance and should be used for Air Quality Impact Assessments (AQIA) for determining CEQA impacts. These screening criteria can be used to demonstrate that a project's total emissions would not result in a significant impact as defined by CEQA. Also, since SDAPCD does not have an air quality impact threshold for Volatile Organic Compounds (VOCs), it is acceptable to use the Coachella Valley VOC threshold from South Coast Air Quality Management District. Should emissions be found to exceed these thresholds, additional modeling is required to demonstrate that the project's total air quality impacts are below the state and federal ambient air quality standards. These screening thresholds for construction and daily operations are shown in Table 2.3 below.

Table 2.3: Screening Threshold for Criteria Pollutants

Pollutant	Total Emissions (Pounds per Day)
Construction Emissions	
Respirable Particulate Matter (PM_{10} and $PM_{2.5}$)	100 and 55
Nitrogen Oxide (NO_x)	250
Sulfur Oxide (SO_x)	250
Carbon Monoxide (CO)	550
Volatile Organic Compounds (VOCs)	75
Reactive Organic Gases (ROG) SCAQMD	75
Operational Emissions	
Respirable Particulate Matter (PM_{10} and $PM_{2.5}$)	100 and 55
Nitrogen Oxide (NO_x)	250
Sulfur Oxide (SO_x)	250
Carbon Monoxide (CO)	550
Lead and Lead Compounds	3.2
Volatile Organic Compounds (VOCs)	75
Reactive Organic Gases (ROG) SCAQMD	75

Non Criteria pollutants such as Hazardous Air Pollutants (HAPs) or Toxic Air Contaminants (TACs) are also regulated by the SDAPCD. Rule 1200 (Toxic Air Contaminants - New Source Review) adopted on June 12, 1996, requires evaluation of potential health risks for any new, relocated, or modified emission unit which may increase emissions of one or more toxic air contaminants. The rule requires that projects that propose to increase cancer risk to between 1 and 10 in one million need to implement toxics best available control technology (T-BACT) or impose the most effective emission limitation, emission control device or control technique to reduce the cancer risk. At no time shall the project increase the cancer risk to over 10 in one million. Projects creating cancer risks less than one in one million are not required to implement T-BACT technology.

The U.S. Environmental Protection Agency (U.S. EPA) uses the term Volatile Organic Compounds (**VOC**) and the California Air Resources Board's (CARB's) Emission Inventory Branch (EIB) uses the term Reactive Organic Gases (**ROG**) to essentially define the same thing. There are minor deviations between compounds that define each term however for purposes of this study we will assume they are essentially the same due to the fact SCAQMD interchanges these words and because URBEMIS2007 directly calculates ROG in place of VOC. The URBEMIS model is shown as ***Attachment A*** at the end of this report.

2.6 Crystalline Silica

Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica but other forms include Cristobalite and tridymite. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica (Source: http://www.osha.gov /Publications/osha3177.pdf).

OSHA has an established Permissible Exposure Limit, or PEL, which is the maximum amount of crystalline silica to which workers may be exposed during an 8-hour work shift (29 CFR 1926.55,1910.1000). OSHA also requires hazard communication training for workers exposed to crystalline silica, and requires a respirator protection program until engineering controls are implemented. Additionally, OSHA has a National Emphasis Program (NEP) for Crystalline Silica exposure to identify, reduce, and eliminate health hazards associated with occupational exposures.

It is assumed the contractor will follow OSHA requirements with respect to workers safety to exposure to Silica dust and would therefore not be an impact onsite. Offsite impacts from Crystalline Silica are not expected given the contractor will be watering the entire site twice daily and installing vegetation on the site as soon as the desired grades are achieved.

2.7 Local Air Quality

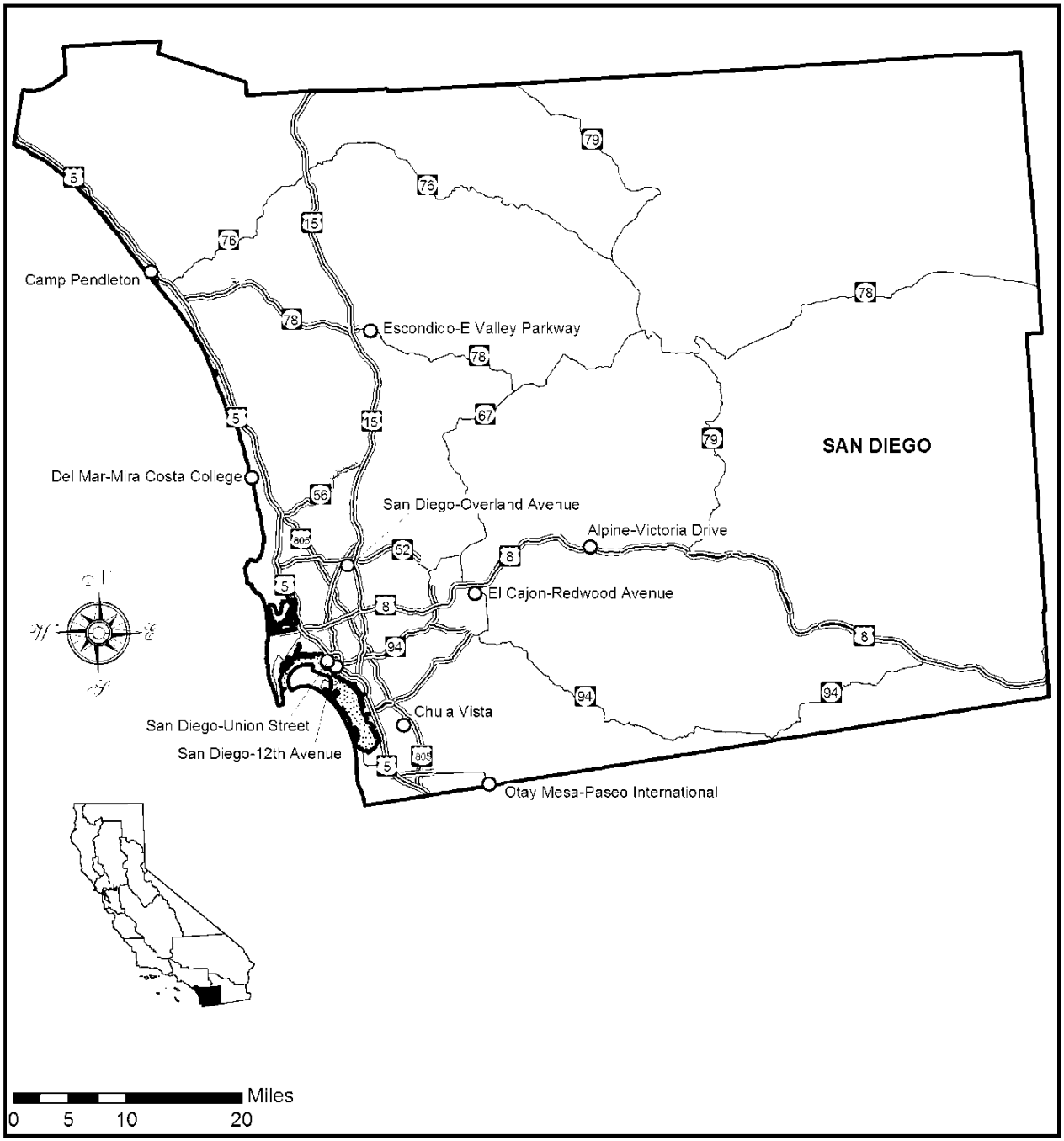
Criteria pollutants are measured continuously throughout the San Diego Air Basin. This data is used to track ambient air quality patterns throughout the County. As mentioned earlier, this data is also used to determine attainment status when compared to the NAAQS and CAAQS. The SDAPCD is responsible for monitoring and reporting monitoring data. The District operates 10 monitoring sites, which collect data on criteria pollutants. The proposed development project is closest to the Camp Pendleton and East Valley Parkway monitoring stations which are located approximately 5.8 and 13.9 miles from the Project site, respectively. Table 2.4 below identifies the criteria pollutants monitored at the aforementioned station.

Four additional sites collect meteorological data which is used by the District to assist with pollutant forecasting, data analysis and characterization of pollutant transport. Figure 2-A on the following page shows the relative locations of the monitoring sites. SDAPCD published the five year air quality summary for all of the monitoring stations within the San Diego basin (Source: http://www.arb.ca.gov/adam/topfour/topfourdisplay.php).

Table 2.4: Three-Year Ambient Air Quality Summary near the Project Site

Pollutant	Closest Recorded Ambient Monitoring Site	Averaging Time	CAAQS	NAAQS	2009	2010	2011
O3 (ppm)	21441 West B St, Camp Pendleton	1 Hour	0.09 ppm	-	0.090	0.092	0.085
	21441 West B St, Camp Pendleton	8 Hour	0.070 ppm	0.075 ppm	0.076	0.78	0.71
PM10 (µg/m3)	600 E Valley Parkway, Escondido	24 Hour	50 µg/m3	150 µg/m3	75	43	40
	600 E Valley Parkway, Escondido	Annual Arithmetic Mean	20 µg/m3	-	24.6	21.0	18.8
PM2.5 (µg/m3)	21441 West B St, Camp Pendleton	24 Hour	-	35 µg/m3	26.9	26.1	30.7
NO2 (ppm)	21441 West B St, Camp Pendleton	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.010	0.008	0.007
	21441 West B St, Camp Pendleton	1 Hour	0.18 ppm	-	0.068	0.081	0.066
CO (ppm)	600 E Valley Parkway, Escondido CA	8 Hour	9 ppm	9 ppm	3.24	2.46	2.20

Figure 2-A: Ambient Air Quality Monitoring Stations within SDAB – CARB



3.0 METHODOLOGY

3.1 Construction Emissions Calculations

Air quality impacts related to construction will be calculated using the latest URBEMIS2007 air quality model, which was developed by the California Air Resources Board (CARB). URBEMIS2007 has been approved by SDAPCD and the City for construction emission calculations. URBEMIS incorporates emission factors from the EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions.

Cancer Risk will be determined for Diesel Particulate Matter (DPM) at the point of maximum exposure. The SCREEN3 dispersion model ***(Attachment B)*** can be used to determine the 1-hour concentration for air pollutants at any location near the pollutant generator. Additionally, the model will predict the maximum exposure distance and concentration. Ldn Consulting utilized the worst case exhaust emissions generated from the Project from construction equipment as calculated within the URBEMIS2007 model. The worst case cancer risk if exposed to a DPM dose for 70 years is defined as:

$$CR_{DPM} = C_{DPM} \times URF_{DPM}$$

CRDPM = CDPM x URFDPM

Where, CRDPM = Cancer risk from diesel particulate matter (probability on an individual developing Cancer

CDPM = Annual average DPM concentration in µg/m3 (SCREEN3 predicts a 1-hr concentration and is corrected to an annual average by multiplying the 1-hr average by 0.08 (Source: U.S. EPA, 1992; ARB, 1994)

URFDPM = The inhalation unit risk factor for diesel particulate was established by ARB as 300 in one million per continuous exposure of 1 µg/m3 of DPM over a 70-year period.

(Source: Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling emissions for CEQA Air Quality Analysis (August 2003))

3.2 Construction Assumptions

Grading of the proposed project will disturb roughly 74 acres of the 155.38 acre project site and would consist of clearing/grubbing, mass and finish grading and would be expected to last approximately five (5) months long. As part of that work, the project engineer also expects that blasting operations will be necessary. The blasting operations would occur over a 10-day period with seven days of rock drilling and three days of blasting. During this operation, grading operations will occur simultaneously. It's expected that the balanced earthwork quantities will be 610,000 CY with 27,000 CY developed from blasting.

After grading is complete, the project would start the trenching operations for wet and dry utilities and would last approximately 225 working days following with the commencement of building construction which would begin a three year process of building out the remainder of the proposed development.

The project is expected to perform three (3) separate blasts which would include all the drilling necessary to place approximately 8,000 – 10,000 lbs of Ammonium Nitrate. It's expected that drilling would occur for seven days and then 3 days of blasting. This operation would be expected during mass grading operations. Table 3.1 below shows the expected timeframes for the construction processes for all the project infrastructure, facilities, improvements and residential structures at the proposed project location.

Table 3.1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Completion	Quantity
Mass Site Grading	1/1/2014	2/23/2014	
Scrapers			8
Water Trucks			3
Other General Industrial Equipment			2
Rubber Tired Dozers			2
Graders			1
Mass Site Grading w/ Blasting	2/24/2014	3/7/2014	
Off Highway Trucks			6
Bore/Drill Rigs			3
Water Trucks			2
Excavators			1
Graders			1
Other Material Handling Equipment			1
Rubber Tired Dozers			1
Tractors/Loaders/Backhoes			1
Fine Site Grading	3/8/2014	5/31/2014	
Scrapers			8
Water Trucks			3
Other Material Handling Equipment			2
Rubber Tired Dozers			2
Graders			1
Trenching	6/1/2014	4/1/2015	
Excavators			2
Tractors/Loaders/Backhoes			2
Other General Industrial Equipment			1
Water Trucks			1

This equipment list is based upon equipment inventory within URBEMIS2007. The quantity and types are based upon assumptions from Projects of similar size and scope in the County of San Diego.

Table 3.1 Cont.: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Completion	Quantity
Paving	2/15/2015	4/1/2015	
Cement and Mortar Mixers			4
Paving Equipment			2
Graders			1
Pavers			1
Rollers			1
Scrapers			1
Tractors/Loaders/Backhoes			1
Water Trucks			1
Building Construction	4/1/2015	10/1/2018	
Welders			3
Forklifts			2
Tractors/Loaders/Backhoes			2
Aerial Lifts			1
Cranes			1
Generator Sets			1
Rough Terrain Forklifts			1
Architectural Coating (Phase II)	7/1/2015	10/1/2018	
This equipment list is based upon equipment inventory within URBEMIS2007. The quantity and types are based upon assumptions from Projects of similar size and scope in the County of San Diego.			

Blasting operations usually require a chemical material that is capable of extremely rapid combustion resulting in an explosion or detonation. These materials are usually mixtures of several ingredients but are often oxygen deficient as combustion reactions takes place which causes a formation of carbon monoxide and also to a lesser extent nitrogen oxides. For ammonium nitrate and fuel oil (ANFO) mixtures it is expected that carbon monoxide would be generated in quantities of 67 lbs per every ton of explosives and nitrogen oxides would be generated at 17 lbs per the same quantity (Source: EPA-AP 42, Fifth Edition Compilation of Air Pollutant Emission Factors - www.epa.gov/ttn/chief/ap42/ch13/final /c13s03.pdf).

3.3 Operational Emissions

Operational Emissions from daily trips and area sources will be calculated utilizing the URBEMIS 2007 model. Emissions from both daily trips and area sources will be considered additive and combined to show total Project related emission outputs.

URBEMIS 2007 utilizes the EMFAC2007 model for daily trips, which calculates emission rates from all motor vehicles, such as passenger cars to heavy-duty trucks, operating on highways, freeways and local roads in California and reflects CARB's current understanding of how vehicles travel and how much they pollute. Table 3.2 shows the Project trip breakdown.

Table 3.2: Proposed Project Trip Breakdown

Vehicle Description	Project Percentage
Light Auto	47.8
Light Truck < 3,750 lbs	10.9
Light Truck 3,751 – 5,750 lbs	22.1
Medium Truck 5,751 – 8,500 lbs	9.9
Light-Heavy Truck 8,501 – 10,000 lbs	1.8
Light-Heavy Truck 10,001 – 14,000 lbs	0.7
Medium-Heavy Truck 14,001 – 33,000 lbs	1.0
Heavy-Heavy Truck 33,001 – 60,000 lbs	0.9
Other Bus	0.1
Urban Bus	0.1
Motorcycle	3.5
School Bus	0.1
Motor Home	1.1

In the EMFAC model, the emission rates are multiplied with vehicle activity data provided by the regional transportation agencies to calculate the statewide or regional emission inventories. An emission inventory is the emission rate (e.g., grams per pollutant emitted over a mile) and vehicle activity (e.g., miles driven per day). Area sources originate from daily onsite uses, which require either burning fuel to generate energy (i.e. natural gas fireplaces, gas furnaces, gas water heaters and small engines) or the evaporation of organic gases such as paints (architectural coatings).

The Project traffic engineer estimated that there will be 5,578 daily trips which were broken down within the Project traffic study (Source: Traffic Impact Analysis for Quarry Creek Master Plan, Urban Systems Associates 2012). These traffic numbers were utilized within the URBEMIS 2007 analysis. The model also estimates emission predictions for ROG, NO_x, CO, SO_2, PM_{10} and $PM_{2.5}$ for area source assumptions. It is assumed that 100% of the facilities will have access to Natural Gas and also be constructed with fireplaces equipped

with natural gas burning logs. Additionally, it was assumed that an average of 5% of the structural surface area will be re-painted each year.

3.4 Micro Scale Operational Emissions

Air pollutant emissions related to project traffic have the potential to create new, or worsen existing localized air quality with respect to carbon monoxide (CO). These increased carbon monoxide "Hot Spots" are determined through the utilization of the ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) as well as the City.

In the event the proposed project traffic adds vehicular trips to either an intersection that operates at LOS E or F or any intersection where the project trips re-classifies the intersection level of service to LOS E or F and when peak-hour trips exceed 3,000 the Project must quantify CO levels (Source: County Of San Diego Guidelines For Determining Significance And Report Format And Content Requirements – March, 2007).

Based on review of the project traffic study, the proposed project would not change either existing or near term intersection projects to operate LOS E or worse and would not be required to conduct a Hot Spot Analysis (Source: Traffic Impact Analysis for Quarry Creek Master Plan, Urban Systems Associates 2012). Therefore, direct and cumulative impacts are below significance.

3.5 Odor Impacts

Potential onsite odor generators would only be expected during short term construction activities such as paving and possibly painting however, the odors would be considered short term and would not last for more than one day after the odor was created and would not be considered an impact. Given this the Project will not have a potential to create offensive odors and would therefore not be considered an impact under CEQA.

4.0 FINDINGS

4.1 Construction Findings

Grading of the proposed project will disturb roughly 74 acres of the 155.38 acre project site and would consist of clearing/grubbing, mass and finish grading and would be expected to last approximately five (5) months long. As part of that work, the project engineer also expects that blasting operations will be necessary. The blasting operations would occur over a 10-day period with seven days of rock drilling and three days of blasting. During this operation, grading operations will occur simultaneously. It's expected that the balanced earthwork quantities will be 610,000 CY with 27,000 CY developed from blasting. Furthermore, blasting is expected to require a worst case load of 10,000 lbs of Ammonium Nitrate.

After grading is complete, the project would start the trenching operations for wet and dry utilities and would last approximately 225 working days following with the commencement of building construction which would begin a three year process of building out the remainder of the proposed development. A summary of the construction emissions is shown in Table 4.1 on the following page.

Given these findings PM_{10} and $PM_{2.5}$ emissions would exceed SDAPCD air quality standards between the start of the Project's grading period until the end of the grading period in 2014 and would require mitigation to comply during these activities. This impact would be limited to grading, trenching and fine grading only. No impacts are expected during building construction activities from 2015 to 2018. It was found that the following mitigation measures would be required to reduce PM_{10} impacts during the grading period to a level below significance:

1. *Apply water during grading/grubbing and blasting activities to all active disturbed areas at least twice daily (Assuming a 51% control efficiency).*
2. *Apply non-toxic soil stabilizers according to manufacturer's specification to all inactive construction areas (Previously graded areas inactive for ten days or more)*
3. *Apply water to all onsite unpaved roadways at least two times daily (Assuming 51% control efficiency).*
4. *Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).*

Table 4.1: Expected Construction Emissions Summary

Year	ROG	NO_x	CO	SO_2	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ (Total)
2014 (lb/day) Unmitigated	18.48	156.78	72.12	0.00	752.62	6.07	758.69	157.18	5.59	162.77
Exceeds Screening Threshold	No	No	No	No	-	-	**Yes**	-	-	**Yes**
2014(lb/day) Mitigated	18.48	156.78	72.12	0.00	90.00	6.07	96.07	18.80	5.59	24.37
Exceeds Screening Threshold	No	No	No	No	-	-	**No**	-	-	**No**
2015 (lb/day) Unmitigated	28.23	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24
Exceeds Screening Threshold	No	No	No	No	-	-	No	-	-	No
2016 (lb/day) Unmitigated	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52
Exceeds Screening Threshold	No	No	No	No	-	-	No	-	-	No
2017 (lb/day) Unmitigated	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38
Exceeds Screening Threshold	No	No	No	No	-	-	No	-	-	No
2018 (lb/day) Unmitigated	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23
Exceeds Screening Threshold	No	No	No	No	-	-	No	-	-	No

Furthermore, since blasting operations are expected to be concurrently used during grading operations and on any given day it can be assumed that all grading equipment identified earlier in Table 3.1 above with respect to mass grading could be used onsite along with any ammonium nitrate blast operation proposed. Therefore, the impacts calculated would be considered worst-case.

The proposed Project would be expected to utilize 4 to 5 tons of ammonium nitrate for a blast and would therefore generate up to 335 lbs of carbon monoxide and up to 85 lbs of nitrogen oxides on a given day of blasting. These quantities would be additive to the mass grading operations for the entire project site and could be added to the worst-case mass grading daily CO and NO_x output of 72.12 and 156.78 lbs identified in Table 4.1 which would be expected to increase the CO an NO_x outputs to 407.12 and 241.78 respectively. Based on these results, no impacts are expected for CO or NO_x.

4.2 Health Risk

Based upon this air quality modeling, we find that worst-case PM_{10} from exhaust could be as high 6.07 lbs per construction day (8-hours) during the expected grading phase including blasting but was assume over the entire construction period as a worst-case assumption. The emissions would be 0.0247 grams per second DPM during the construction day which would be expected to be distributed over the disturbed project area of 74 acres. Converting pounds (lbs) per day to grams per second is shown below:

$$\frac{6.07\frac{lb}{day} * 453\frac{grams}{lb}}{28{,}800\frac{\sec onds}{Constructionday}} = 0.0954\frac{grams}{\sec ond}$$

The average emission rate over the grading area is 6.7802×10^{-5} g/m^2/s, which was calculated as follows:

$$\frac{0.0954\frac{grams}{\sec ond}}{74acres * 4{,}046\frac{meters^2}{acre}} = 3.19 * 10^{-7}\frac{\frac{grams}{meters^2}}{\sec ond}$$

Utilizing the SCREEN3 dispersion model, we find that the peak maximum 1-hr concentration is 11.55 µg/m3 during the worst-case construction period. Converting the peak 1-hr concentration to an annual concentration reduces the concentration to 0.924 µg/m3 Therefore, utilizing the risk equation identified above and calculating the cancer risk over a 70 year continuous dose would be:

CRDPM-70yr dose = 0.0003 x 0.924 = 0.000277

The numerical number of individuals exposed to DPM of this concentration from the project would be less than one in one million and would not be considered an impact. The SCREEN3 dispersion model outputs are attached to this report.

4.3 Operational Findings

Based on the Project's traffic study the proposed Project could add as many as 5,578 daily, without any reductions due to the proposed/planned mass transisit, trips once the Project is fully operational sometime in the year 2018. This worst case project trip distribution and expected average trip distances were taken from the project traffic study and were assumed to generate trips within a typical urbanized environment as predicted by URBEMIS2007.

Additionally, The URBEMIS2007 Model was run for both the winter and summer scenario assuming an average winter temperature of 60ºF and an average summer temperature of 80ºF which would generate worst-case operational emissions. Average trip distances and mix ratios assumed within URBEMIS2007 would are considered typical for the proposed project scenario.

The expected daily pollutant generation can be calculated utilizing the product of the average daily miles traveled and the expected emissions inventory calculated by EMFAC2007; URBEMIS2007 performs this calculation. The daily pollutants calculated are shown in Table 4.2 below. Based upon these calculations, the proposed project will not exceed SDAPCD significance thresholds and would not require any mitigation measures.

Table 4.2: Expected Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emission Estimates (Lb/Day)	36.91	9.39	15.44	0.00	0.06	0.06
Operational Vehicle Emissions (Lb/Day)	29.46	38.14	333.69	0.43	81.66	15.76
Total (Lb/Day)	66.37	47.53	349.13	0.43	81.72	15.82
SCAQMD Thresholds	75	250	550	250	100	55
Significant?	No	No	No	No	No	No
Winter Scenario						
Area Source Emission Estimates (Lb/Day)	35.69	13.21	5.63	0.03	0.34	0.34
Operational Vehicle Emissions (Lb/Day)	30.82	45.62	321.84	0.41	81.66	15.76
Total (Lb/Day)	66.51	58.83	327.47	0.44	82.00	16.10
SCAQMD Thresholds	75	250	550	250	100	55
Significant?	No	No	No	No	No	No

Daily pollutant generation assumes trip distances within URBEMIS 2007

4.4 Odor Impact Findings

Odor impacts from construction operations would be considered short term events and would not be considered an impact.

4.5 Micro-Scale Operational Findings

Based on a review of direct trips associated with the project, the proposed project would not add vehicular trips or re-classify any intersections to a level of service of LOS E or F Therefore, CO levels would not need to be quantified nor considered a direct significant impact.

4.6 Cumulative Findings

From a construction perspective, there is a potential to create a cumulative impact if the propose project is both simultaneously constructed alongside an adjacent construction project or a project where project emission contours overlap. These scenarios would cumulatively cause emissions to exceed SDAPCD emission thresholds.

The project traffic study identifies nine projects within the general area around the project site:

1) El Corazon Specific Plan - 7,960 ADT
2) Tri-City Medical Office Building 3,000 ADT.
3) Plaza Camino Real Westfield Shopping Center Revitalization Project (5,186 ADT from vacant leasable space; 1240 ADT from new space)
4) Carlsbad High School (1,950 ADT)
5) Robertson Ranch (17,800 ADT)
6) Holly Springs Catarini (2,250 ADT)
7) Dos Colinas (1,340 ADT)
8) Palomar Airport Road Commons (12,370 ADT)
9) La Costa Town Square (25,516 ADT)

The SCEEN3 dispersion model estimates that worst-case emissions would be generated at 387 Meters from the project centroid and it's clear that no identified cumulative projects are within the proposed Quarry Creek project emission contour, however, worst-case contours are not know for nearby cumulative projects. It's estimated that the worst-case contour for any of the listed cumulative projects would not have emission contours exceeding 1,000 meters. Therefore, any project over 1,387 meters from the project would not cumulatively be expected to add or contribute to emissions generated from the proposed project. Given this, none of the identified projects are located within the 1,387 meter contour line and no cumulative construction impacts are expected.

Figure 4-A below shows the worst-case project emission contour as well as a worst-case cumulative Project location contour which identifies the closest a cumulative project could

exist without cumulatively adding construction emissions should both projects be constructed simultaneously. In other words any additional large construction projects within the 1,378 meter contour would require further analysis of the cumulative impact significance.

Figure 4-A: Worst Case Contour and Cumulatively Considerable Contour

Based on a review of the cumulative plus project traffic projections, the proposed project would not add vehicular trips or re-classify any intersections to a level of service to LOS E or F. Therefore, no cumulative operational CO impacts are expected. Give this, combined with the conclusion that no operational impacts are expected, the project would also comply with the Regional Air Quality Strategy (RAQS) and the State Implementation plan (SIP) as explained in Section 2.3.3 and would not result in a cumulatively considerable net increase of any criteria pollutant.

4.7 Conclusion of Findings

Based upon our analysis the only significant impacts expected would be during construction grading operations. Exceedances are expected for PM_{10} and $PM_{2.5}$ without mitigation measures. The following mitigation requirements will be required during mass or fine grading as proposed within this report (Year - 2014) to reduce these impacts to a level below significance:

1. *Apply water during grading/grubbing and blasting activities to all active disturbed areas at least twice daily (Assuming a 51% control efficiency).*
2. *Apply non-toxic soil stabilizers according to manufacturer's specification to all inactive construction areas (Previously graded areas inactive for ten days or more)*
3. *Apply water to all onsite unpaved roadways at least two times daily (Assuming 51% control efficiency).*
4. *Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).*

5.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the air quality environment and impacts within and surrounding the proposed Quarry Creek development. This report was prepared utilizing the latest emission rates and reduction methodologies.

DRAFT

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Date October 5, 2012

ATTACHMENT A

URBEMIS 2007

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Jeremy 8-5-12\Quarry Creek\Quarry Creek.urb924

Project Name: Quarry Creek Mixed Use Development

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	18.48	156.78	72.12	0.00	752.62	6.07	758.69	157.18	5.59	162.77	19,493.13
2014 TOTALS (lbs/day mitigated)	18.48	156.78	72.12	0.00	90.00	6.07	96.07	18.80	5.59	24.37	19,493.13
2015 TOTALS (lbs/day unmitigated)	28.23	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
2015 TOTALS (lbs/day mitigated)	28.23	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
2016 TOTALS (lbs/day unmitigated)	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
2016 TOTALS (lbs/day mitigated)	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
2017 TOTALS (lbs/day unmitigated)	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
2017 TOTALS (lbs/day mitigated)	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
2018 TOTALS (lbs/day unmitigated)	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30

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2018 TOTALS (lbs/day mitigated)	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	36.91	9.39	15.44	0.00	0.06	0.06	11,832.20

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	29.46	38.14	333.69	0.43	81.66	15.76	45,819.28

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	66.37	47.53	349.13	0.43	81.72	15.82	57,651.48

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/21/2014 Active Days: 38	18.39	156.09	71.92	0.00	**752.62**	6.05	758.67	**157.18**	5.57	162.75	19,401.23
Mass Grading 01/01/2014-02/23/2014	18.39	156.09	71.92	0.00	752.62	6.05	758.67	157.18	5.57	162.75	19,401.23
Mass Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Mass Grading Off Road Diesel	18.30	155.92	68.91	0.00	0.00	6.04	6.04	0.00	5.56	5.56	19,011.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91

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Time Slice 2/24/2014-3/7/2014 Active Days: 10	11.06	86.96	44.20	0.00	**752.62**	3.31	755.93	**157.18**	3.05	160.23	15,647.91
Mass Grading 02/24/2014-03/07/2014	11.06	86.96	44.20	0.00	752.62	3.31	755.93	157.18	3.05	160.23	15,647.91
Mass Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Mass Grading Off Road Diesel	10.97	86.78	41.19	0.00	0.00	3.30	3.30	0.00	3.04	3.04	15,258.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 3/10/2014-5/30/2014 Active Days: 60	18.48	156.78	72.12	0.00	**752.62**	**6.07**	**758.69**	**157.18**	**5.59**	**162.77**	19,493.13
Fine Grading 03/08/2014-05/31/2014	18.48	156.78	72.12	0.00	752.62	6.07	758.69	157.18	5.59	162.77	19,493.13
Fine Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Fine Grading Off Road Diesel	18.39	156.60	69.11	0.00	0.00	6.06	6.06	0.00	5.58	5.58	19,103.22
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 6/2/2014-12/31/2014 Active Days: 153	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching 06/01/2014-04/01/2015	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching Off Road Diesel	2.44	19.29	11.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,581.99
Trenching Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.22
Time Slice 1/1/2015-2/13/2015 Active Days: 32	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

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Time Slice 2/16/2015-3/31/2015 Active Days: 32	7.41	50.05	33.59	0.01	0.03	2.74	2.78	0.01	2.52	2.53	7,124.80
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23
Time Slice 4/1/2015-4/1/2015 Active Days: 1	12.73	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 4/2/2015-6/30/2015 Active Days: 64	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Time Slice 7/1/2015-12/31/2015 Active Days: 132	28.23	28.83	61.14	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,413.55
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Coating 07/01/2015-10/01/2018	22.90	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2016-12/30/2016 Active Days: 261	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
Building 04/01/2015-10/01/2018	4.86	26.31	57.36	0.07	0.37	1.53	1.90	0.13	1.39	1.52	10,387.76
Building Off Road Diesel	3.15	17.69	15.07	0.00	0.00	1.13	1.13	0.00	1.04	1.04	2,536.62
Building Vendor Trips	0.59	6.56	6.24	0.02	0.09	0.25	0.34	0.03	0.23	0.26	2,398.79
Building Worker Trips	1.13	2.05	36.05	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.35
Coating 07/01/2015-10/01/2018	22.90	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Time Slice 1/2/2017-12/29/2017 Active Days: 260	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
Building 04/01/2015-10/01/2018	4.42	24.05	54.03	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,388.01
Building Off Road Diesel	2.85	16.35	14.84	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,536.62
Building Vendor Trips	0.54	5.81	5.82	0.02	0.09	0.23	0.32	0.03	0.21	0.24	2,398.89
Building Worker Trips	1.03	1.88	33.37	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.51
Coating 07/01/2015-10/01/2018	22.90	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2018-10/1/2018 Active Days: 196	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30
Building 04/01/2015-10/01/2018	4.01	21.98	50.93	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,388.25
Building Off Road Diesel	2.57	15.08	14.59	0.00	0.00	0.86	0.86	0.00	0.79	0.79	2,536.62
Building Vendor Trips	0.50	5.17	5.44	0.02	0.09	0.21	0.29	0.03	0.19	0.22	2,398.98
Building Worker Trips	0.94	1.72	30.91	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.65
Coating 07/01/2015-10/01/2018	22.90	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Phase Assumptions

Phase: Fine Grading 3/8/2014 - 5/31/2014 - Fine Grading

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

8 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2014 - 2/23/2014 - Mass Grading

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

8 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 2/24/2014 - 3/7/2014 - Mass Grading with Blasting

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

3 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

6 Off Highway Trucks (600 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2014 - 4/1/2015 - Trenching Activities

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 2/15/2015 - 4/1/2015 - Paving Activities

Acres to be Paved: 7.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Building Construction 4/1/2015 - 10/1/2018 - Building Construction

Off-Road Equipment:

1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 7 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2015 - 10/1/2018 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/21/2014 Active Days: 38	18.39	156.09	71.92	0.00	90.00	6.05	96.06	18.80	5.57	24.37	19,401.23
Mass Grading 01/01/2014-02/23/2014	18.39	156.09	71.92	0.00	90.00	6.05	96.06	18.80	5.57	24.37	19,401.23
Mass Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.79	0.00	18.79	0.00
Mass Grading Off Road Diesel	18.30	155.92	68.91	0.00	0.00	6.04	6.04	0.00	5.56	5.56	19,011.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91

Time Slice 2/24/2014-3/7/2014 Active Days: 10	11.06	86.96	44.20	0.00	90.00	3.31	93.32	18.80	3.05	21.85	15,647.91
Mass Grading 02/24/2014-03/07/2014	11.06	86.96	44.20	0.00	90.00	3.31	93.32	18.80	3.05	21.85	15,647.91
Mass Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.79	0.00	18.79	0.00
Mass Grading Off Road Diesel	10.97	86.78	41.19	0.00	0.00	3.30	3.30	0.00	3.04	3.04	15,258.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 3/10/2014-5/30/2014 Active Days: 60	18.48	156.78	72.12	0.00	90.00	**6.07**	96.07	18.70	**5.59**	24.28	19,493.13
Fine Grading 03/08/2014-05/31/2014	18.48	156.78	72.12	0.00	90.00	6.07	96.07	18.70	5.59	24.28	19,493.13
Fine Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.69	0.00	18.69	0.00
Fine Grading Off Road Diesel	18.39	156.60	69.11	0.00	0.00	6.06	6.06	0.00	5.58	5.58	19,103.22
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 6/2/2014-12/31/2014 Active Days: 153	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching 06/01/2014-04/01/2015	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching Off Road Diesel	2.44	19.29	11.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,581.99
Trenching Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.22
Time Slice 1/1/2015-2/13/2015 Active Days: 32	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 2/16/2015-3/31/2015 Active Days: 32	7.41	50.05	33.59	0.01	0.03	2.74	2.78	0.01	2.52	2.53	7,124.80
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23
Time Slice 4/1/2015-4/1/2015 Active Days: 1	12.73	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 4/2/2015-6/30/2015 Active Days: 64	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Time Slice 7/1/2015-12/31/2015 Active Days: 132	28.23	28.83	61.14	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,413.55
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Coating 07/01/2015-10/01/2018	22.90	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2016-12/30/2016 Active Days: 261	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
Building 04/01/2015-10/01/2018	4.86	26.31	57.36	0.07	0.37	1.53	1.90	0.13	1.39	1.52	10,387.76
Building Off Road Diesel	3.15	17.69	15.07	0.00	0.00	1.13	1.13	0.00	1.04	1.04	2,536.62
Building Vendor Trips	0.59	6.56	6.24	0.02	0.09	0.25	0.34	0.03	0.23	0.26	2,398.79
Building Worker Trips	1.13	2.05	36.05	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.35
Coating 07/01/2015-10/01/2018	22.90	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Time Slice 1/2/2017-12/29/2017 Active Days: 260	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
Building 04/01/2015-10/01/2018	4.42	24.05	54.03	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,388.01
Building Off Road Diesel	2.85	16.35	14.84	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,536.62
Building Vendor Trips	0.54	5.81	5.82	0.02	0.09	0.23	0.32	0.03	0.21	0.24	2,398.89
Building Worker Trips	1.03	1.88	33.37	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.51
Coating 07/01/2015-10/01/2018	22.90	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2018-10/1/2018 Active Days: 196	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30
Building 04/01/2015-10/01/2018	4.01	21.98	50.93	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,388.25
Building Off Road Diesel	2.57	15.08	14.59	0.00	0.00	0.86	0.86	0.00	0.79	0.79	2,536.62
Building Vendor Trips	0.50	5.17	5.44	0.02	0.09	0.21	0.29	0.03	0.19	0.22	2,398.98
Building Worker Trips	0.94	1.72	30.91	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.65
Coating 07/01/2015-10/01/2018	22.90	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 3/8/2014 - 5/31/2014 - Fine Grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51.5%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

The following mitigation measures apply to Phase: Mass Grading 1/1/2014 - 2/23/2014 - Mass Grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

The following mitigation measures apply to Phase: Mass Grading 2/24/2014 - 3/7/2014 - Mass Grading with Blasting

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.71	9.25	3.95	0.00	0.02	0.02	11,812.44
Hearth - No Summer Emissions							
Landscape	1.45	0.14	11.49	0.00	0.04	0.04	19.76
Consumer Products	32.09						
Architectural Coatings	2.66						
TOTALS (lbs/day, unmitigated)	36.91	9.39	15.44	0.00	0.06	0.06	11,832.20

Area Source Changes to Defaults

Percent residential using natural gas changed from 60% to 100%

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Cords of wood burned per year per wood stove changed from 1.48 cords per year to 0.5 cords per year

Days used per year per wood stove changed from 82 days to 30 days

Cords of wood burned per year per wood fireplace changed from 0.28 cords per year to 0.25 cords per year

Days used per year per wood stove changed from 82 days to 30 days

The residential percentage of surface area repainted each year changed from 10% to 5%

The nonresidential percentage of surface area repainted each year changed from 10% to 5%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	6.16	8.19	71.84	0.09	17.54	3.39	9,847.48
Apartments low rise	3.32	4.09	35.86	0.05	8.76	1.69	4,915.47
Condo/townhouse general	18.67	24.11	211.52	0.27	51.65	9.97	28,996.29
Day-care center	0.60	0.91	7.54	0.01	1.93	0.37	1,071.93
Blank (Edit this description)	0.71	0.84	6.93	0.01	1.78	0.34	988.11
TOTALS (lbs/day, unmitigated)	29.46	38.14	333.69	0.43	81.66	15.76	45,819.28

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2016 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	14.80	10.00	dwelling units	119.00	1,190.00	10,174.14
Apartments low rise	5.50	6.00	dwelling units	99.00	594.00	5,078.52
Condo/townhouse general	21.20	8.00	dwelling units	438.00	3,504.00	29,958.15
Day-care center		75.00	1000 sq ft	2.00	150.00	1,118.62
Blank (Edit this description)		5.00	unknown	28.00	140.00	1,032.01
					5,578.00	47,361.44

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	48.4	0.2	99.6	0.2
Light Truck < 3750 lbs	10.8	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	9.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	76.5	23.5
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.6	47.2	52.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
% of Trips - Commercial (by land use)						
Day-care center				5.0	2.5	92.5
Blank (Edit this description)				1.0	0.5	98.5

Operational Changes to Defaults

Ambient summer temperature changed from 85 degrees F to 80 degrees F

Ambient winter temperature changed from 40 degrees F to 60 degrees F

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Jeremy 8-5-12\Quarry Creek\Quarry Creek.urb924

Project Name: Quarry Creek Mixed Use Development

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	18.48	156.78	72.12	0.00	752.62	6.07	758.69	157.18	5.59	162.77	19,493.13
2014 TOTALS (lbs/day mitigated)	18.48	156.78	72.12	0.00	90.00	6.07	96.07	18.80	5.59	24.37	19,493.13
2015 TOTALS (lbs/day unmitigated)	28.23	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
2015 TOTALS (lbs/day mitigated)	28.23	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
2016 TOTALS (lbs/day unmitigated)	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
2016 TOTALS (lbs/day mitigated)	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
2017 TOTALS (lbs/day unmitigated)	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
2017 TOTALS (lbs/day mitigated)	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
2018 TOTALS (lbs/day unmitigated)	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30

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2018 TOTALS (lbs/day mitigated)	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	35.69	13.21	5.63	0.03	0.34	0.34	16,863.03

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	30.82	45.62	321.84	0.41	81.66	15.76	41,496.22

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	66.51	58.83	327.47	0.44	82.00	16.10	58,359.25

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/21/2014 Active Days: 38	18.39	156.09	71.92	0.00	**752.62**	6.05	758.67	**157.18**	5.57	162.75	19,401.23
Mass Grading 01/01/2014-02/23/2014	18.39	156.09	71.92	0.00	752.62	6.05	758.67	157.18	5.57	162.75	19,401.23
Mass Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Mass Grading Off Road Diesel	18.30	155.92	68.91	0.00	0.00	6.04	6.04	0.00	5.56	5.56	19,011.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91

Time Slice 2/24/2014-3/7/2014 Active Days: 10	11.06	86.96	44.20	0.00	**752.62**	3.31	755.93	**157.18**	3.05	160.23	15,647.91
Mass Grading 02/24/2014-03/07/2014	11.06	86.96	44.20	0.00	752.62	3.31	755.93	157.18	3.05	160.23	15,647.91
Mass Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Mass Grading Off Road Diesel	10.97	86.78	41.19	0.00	0.00	3.30	3.30	0.00	3.04	3.04	15,258.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 3/10/2014-5/30/2014 Active Days: 60	18.48	156.78	72.12	0.00	**752.62**	**6.07**	**758.69**	**157.18**	**5.59**	**162.77**	19,493.13
Fine Grading 03/08/2014-05/31/2014	18.48	156.78	72.12	0.00	752.62	6.07	758.69	157.18	5.59	162.77	19,493.13
Fine Grading Dust	0.00	0.00	0.00	0.00	752.60	0.00	752.60	157.17	0.00	157.17	0.00
Fine Grading Off Road Diesel	18.39	156.60	69.11	0.00	0.00	6.06	6.06	0.00	5.58	5.58	19,103.22
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 6/2/2014-12/31/2014 Active Days: 153	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching 06/01/2014-04/01/2015	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching Off Road Diesel	2.44	19.29	11.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,581.99
Trenching Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.22
Time Slice 1/1/2015-2/13/2015 Active Days: 32	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

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Time Slice 2/16/2015-3/31/2015 Active Days: 32	7.41	50.05	33.59	0.01	0.03	2.74	2.78	0.01	2.52	2.53	7,124.80
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23
Time Slice 4/1/2015-4/1/2015 Active Days: 1	12.73	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 4/2/2015-6/30/2015 Active Days: 64	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Time Slice 7/1/2015-12/31/2015 Active Days: 132	28.23	28.83	61.14	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,413.55
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Coating 07/01/2015-10/01/2018	22.90	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2016-12/30/2016 Active Days: 261	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
Building 04/01/2015-10/01/2018	4.86	26.31	57.36	0.07	0.37	1.53	1.90	0.13	1.39	1.52	10,387.76
Building Off Road Diesel	3.15	17.69	15.07	0.00	0.00	1.13	1.13	0.00	1.04	1.04	2,536.62
Building Vendor Trips	0.59	6.56	6.24	0.02	0.09	0.25	0.34	0.03	0.23	0.26	2,398.79
Building Worker Trips	1.13	2.05	36.05	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.35
Coating 07/01/2015-10/01/2018	22.90	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Time Slice 1/2/2017-12/29/2017 Active Days: 260	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
Building 04/01/2015-10/01/2018	4.42	24.05	54.03	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,388.01
Building Off Road Diesel	2.85	16.35	14.84	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,536.62
Building Vendor Trips	0.54	5.81	5.82	0.02	0.09	0.23	0.32	0.03	0.21	0.24	2,398.89
Building Worker Trips	1.03	1.88	33.37	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.51
Coating 07/01/2015-10/01/2018	22.90	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2018-10/1/2018 Active Days: 196	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30
Building 04/01/2015-10/01/2018	4.01	21.98	50.93	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,388.25
Building Off Road Diesel	2.57	15.08	14.59	0.00	0.00	0.86	0.86	0.00	0.79	0.79	2,536.62
Building Vendor Trips	0.50	5.17	5.44	0.02	0.09	0.21	0.29	0.03	0.19	0.22	2,398.98
Building Worker Trips	0.94	1.72	30.91	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.65
Coating 07/01/2015-10/01/2018	22.90	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Phase Assumptions

Phase: Fine Grading 3/8/2014 - 5/31/2014 - Fine Grading

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

8 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2014 - 2/23/2014 - Mass Grading

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

8 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 2/24/2014 - 3/7/2014 - Mass Grading with Blasting

Total Acres Disturbed: 74

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5700 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

3 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

6 Off Highway Trucks (600 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2014 - 4/1/2015 - Trenching Activities

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 2/15/2015 - 4/1/2015 - Paving Activities

Acres to be Paved: 7.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Building Construction 4/1/2015 - 10/1/2018 - Building Construction

Off-Road Equipment:

1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 7 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2015 - 10/1/2018 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/21/2014 Active Days: 38	18.39	156.09	71.92	0.00	90.00	6.05	96.06	18.80	5.57	24.37	19,401.23
Mass Grading 01/01/2014-02/23/2014	18.39	156.09	71.92	0.00	90.00	6.05	96.06	18.80	5.57	24.37	19,401.23
Mass Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.79	0.00	18.79	0.00
Mass Grading Off Road Diesel	18.30	155.92	68.91	0.00	0.00	6.04	6.04	0.00	5.56	5.56	19,011.32
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91

Time Slice 2/24/2014-3/7/2014 Active Days: 10	11.06	86.96	44.20	0.00	90.00	3.31	93.32	18.80	3.05	21.85	15,647.91
Mass Grading 02/24/2014-03/07/2014	11.06	86.96	44.20	0.00	90.00	3.31	93.32	18.80	3.05	21.85	15,647.91
Mass Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.79	0.00	18.79	0.00
Mass Grading Off Road Diesel	10.97	86.78	41.19	0.00	0.00	3.30	3.30	0.00	3.04	3.04	15,258.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 3/10/2014-5/30/2014 Active Days: 60	18.48	156.78	72.12	0.00	90.00	**6.07**	96.07	18.70	**5.59**	24.28	19,493.13
Fine Grading 03/08/2014-05/31/2014	18.48	156.78	72.12	0.00	90.00	6.07	96.07	18.70	5.59	24.28	19,493.13
Fine Grading Dust	0.00	0.00	0.00	0.00	89.98	0.00	89.98	18.69	0.00	18.69	0.00
Fine Grading Off Road Diesel	18.39	156.60	69.11	0.00	0.00	6.06	6.06	0.00	5.58	5.58	19,103.22
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.10	0.17	3.01	0.00	0.02	0.01	0.03	0.01	0.01	0.02	389.91
Time Slice 6/2/2014-12/31/2014 Active Days: 153	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching 06/01/2014-04/01/2015	2.47	19.35	12.45	0.00	0.01	0.92	0.93	0.00	0.84	0.85	2,728.20
Trenching Off Road Diesel	2.44	19.29	11.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,581.99
Trenching Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.22
Time Slice 1/1/2015-2/13/2015 Active Days: 32	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 2/16/2015-3/31/2015 Active Days: 32	7.41	50.05	33.59	0.01	0.03	2.74	2.78	0.01	2.52	2.53	7,124.80
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23
Time Slice 4/1/2015-4/1/2015 Active Days: 1	12.73	78.86	94.54	0.08	0.40	4.47	4.87	0.14	4.09	4.24	17,512.31
Asphalt 02/15/2015-04/01/2015	5.13	32.71	21.30	0.01	0.02	1.90	1.92	0.01	1.74	1.75	4,396.59
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	4.40	31.51	18.83	0.00	0.00	1.85	1.85	0.00	1.70	1.70	3,840.86
Paving On Road Diesel	0.08	1.08	0.38	0.00	0.01	0.04	0.05	0.00	0.04	0.04	263.27
Paving Worker Trips	0.07	0.12	2.09	0.00	0.01	0.01	0.02	0.01	0.01	0.01	292.46
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Trenching 06/01/2014-04/01/2015	2.28	17.34	12.29	0.00	0.01	0.85	0.85	0.00	0.78	0.78	2,728.22
Trenching Off Road Diesel	2.25	17.28	11.25	0.00	0.00	0.84	0.84	0.00	0.78	0.78	2,581.99
Trenching Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.01	146.23

Time Slice 4/2/2015-6/30/2015 Active Days: 64	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Time Slice 7/1/2015-12/31/2015 Active Days: 132	28.23	28.83	61.14	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,413.55
Building 04/01/2015-10/01/2018	5.33	28.81	60.95	0.07	0.37	1.73	2.10	0.13	1.57	1.70	10,387.51
Building Off Road Diesel	3.45	19.14	15.34	0.00	0.00	1.29	1.29	0.00	1.19	1.19	2,536.62
Building Vendor Trips	0.65	7.44	6.71	0.02	0.09	0.28	0.37	0.03	0.26	0.29	2,398.70
Building Worker Trips	1.23	2.23	38.90	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.19
Coating 07/01/2015-10/01/2018	22.90	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2016-12/30/2016 Active Days: 261	27.76	26.32	57.53	0.07	0.37	1.54	1.91	0.13	1.39	1.52	10,413.81
Building 04/01/2015-10/01/2018	4.86	26.31	57.36	0.07	0.37	1.53	1.90	0.13	1.39	1.52	10,387.76
Building Off Road Diesel	3.15	17.69	15.07	0.00	0.00	1.13	1.13	0.00	1.04	1.04	2,536.62
Building Vendor Trips	0.59	6.56	6.24	0.02	0.09	0.25	0.34	0.03	0.23	0.26	2,398.79
Building Worker Trips	1.13	2.05	36.05	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.35
Coating 07/01/2015-10/01/2018	22.90	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Time Slice 1/2/2017-12/29/2017 Active Days: 260	27.32	24.06	54.19	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,414.06
Building 04/01/2015-10/01/2018	4.42	24.05	54.03	0.07	0.37	1.37	1.74	0.13	1.24	1.38	10,388.01
Building Off Road Diesel	2.85	16.35	14.84	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,536.62
Building Vendor Trips	0.54	5.81	5.82	0.02	0.09	0.23	0.32	0.03	0.21	0.24	2,398.89
Building Worker Trips	1.03	1.88	33.37	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.51
Coating 07/01/2015-10/01/2018	22.90	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Time Slice 1/1/2018-10/1/2018 Active Days: 196	26.91	21.99	51.08	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,414.30
Building 04/01/2015-10/01/2018	4.01	21.98	50.93	0.07	0.37	1.22	1.59	0.13	1.10	1.23	10,388.25
Building Off Road Diesel	2.57	15.08	14.59	0.00	0.00	0.86	0.86	0.00	0.79	0.79	2,536.62
Building Vendor Trips	0.50	5.17	5.44	0.02	0.09	0.21	0.29	0.03	0.19	0.22	2,398.98
Building Worker Trips	0.94	1.72	30.91	0.05	0.28	0.15	0.43	0.10	0.12	0.22	5,452.65
Coating 07/01/2015-10/01/2018	22.90	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05
Architectural Coating	22.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.05

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 3/8/2014 - 5/31/2014 - Fine Grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51.5%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

The following mitigation measures apply to Phase: Mass Grading 1/1/2014 - 2/23/2014 - Mass Grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

The following mitigation measures apply to Phase: Mass Grading 2/24/2014 - 3/7/2014 - Mass Grading with Blasting

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 51% PM25: 51%

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.71	9.25	3.95	0.00	0.02	0.02	11,812.44
Hearth	0.23	3.96	1.68	0.03	0.32	0.32	5,050.59
Landscaping - No Winter Emissions							
Consumer Products	32.09						
Architectural Coatings	2.66						
TOTALS (lbs/day, unmitigated)	35.69	13.21	5.63	0.03	0.34	0.34	16,863.03

Area Source Changes to Defaults

Percent residential using natural gas changed from 60% to 100%

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Cords of wood burned per year per wood stove changed from 1.48 cords per year to 0.5 cords per year

Days used per year per wood stove changed from 82 days to 30 days

Cords of wood burned per year per wood fireplace changed from 0.28 cords per year to 0.25 cords per year

Days used per year per wood stove changed from 82 days to 30 days

The residential percentage of surface area repainted each year changed from 10% to 5%

The nonresidential percentage of surface area repainted each year changed from 10% to 5%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	6.54	9.80	69.25	0.09	17.54	3.39	8,918.81
Apartments low rise	3.38	4.89	34.57	0.04	8.76	1.69	4,451.91
Condo/townhouse general	19.52	28.85	203.91	0.26	51.65	9.97	26,261.77
Day-care center	0.68	1.08	7.35	0.01	1.93	0.37	969.82
Blank (Edit this description)	0.70	1.00	6.76	0.01	1.78	0.34	893.91
TOTALS (lbs/day, unmitigated)	30.82	45.62	321.84	0.41	81.66	15.76	41,496.22

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2016 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	14.80	10.00	dwelling units	119.00	1,190.00	10,174.14
Apartments low rise	5.50	6.00	dwelling units	99.00	594.00	5,078.52
Condo/townhouse general	21.20	8.00	dwelling units	438.00	3,504.00	29,958.15
Day-care center		75.00	1000 sq ft	2.00	150.00	1,118.62
Blank (Edit this description)		5.00	unknown	28.00	140.00	1,032.01
					5,578.00	47,361.44

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	48.4	0.2	99.6	0.2
Light Truck < 3750 lbs	10.8	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	9.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	76.5	23.5
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.6	47.2	52.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
% of Trips - Commercial (by land use)						
Day-care center				5.0	2.5	92.5
Blank (Edit this description)				1.0	0.5	98.5

Operational Changes to Defaults

Ambient summer temperature changed from 85 degrees F to 80 degrees F

Ambient winter temperature changed from 40 degrees F to 60 degrees F

ATTACHMENT B

SCREEN3

08/12/12
07:01:50

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Quarry Creek

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = .319000E-06
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 547.2300
LENGTH OF SMALLER SIDE (M) = 547.2300
RECEPTOR HEIGHT (M) = 1.5000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
10.	8.530	5	1.0	1.0	10000.0	3.00	45.
100.	9.434	5	1.0	1.0	10000.0	3.00	45.
200.	10.29	5	1.0	1.0	10000.0	3.00	45.
300.	11.01	5	1.0	1.0	10000.0	3.00	45.
400.	11.21	5	1.0	1.0	10000.0	3.00	45.
500.	7.355	5	1.0	1.0	10000.0	3.00	45.
600.	5.708	5	1.0	1.0	10000.0	3.00	45.
700.	4.759	5	1.0	1.0	10000.0	3.00	45.
800.	4.118	5	1.0	1.0	10000.0	3.00	45.
900.	3.647	5	1.0	1.0	10000.0	3.00	45.
1000.	3.280	5	1.0	1.0	10000.0	3.00	45.
1100.	2.985	5	1.0	1.0	10000.0	3.00	45.
1200.	2.740	5	1.0	1.0	10000.0	3.00	45.
1300.	2.533	5	1.0	1.0	10000.0	3.00	45.
1400.	2.355	5	1.0	1.0	10000.0	3.00	45.
1500.	2.201	5	1.0	1.0	10000.0	3.00	45.
1600.	2.065	5	1.0	1.0	10000.0	3.00	45.
1700.	1.944	5	1.0	1.0	10000.0	3.00	45.
1800.	1.836	5	1.0	1.0	10000.0	3.00	45.
1900.	1.738	5	1.0	1.0	10000.0	3.00	44.
2000.	1.650	5	1.0	1.0	10000.0	3.00	45.
2100.	1.570	5	1.0	1.0	10000.0	3.00	45.
2200.	1.497	5	1.0	1.0	10000.0	3.00	45.
2300.	1.430	5	1.0	1.0	10000.0	3.00	45.
2400.	1.368	5	1.0	1.0	10000.0	3.00	45.
2500.	1.311	5	1.0	1.0	10000.0	3.00	44.
2600.	1.259	5	1.0	1.0	10000.0	3.00	44.
2700.	1.210	5	1.0	1.0	10000.0	3.00	43.
2800.	1.164	5	1.0	1.0	10000.0	3.00	45.

					SCREEN		
2900.	1.122	5	1.0	1.0	10000.0	3.00	45.
3000.	1.082	5	1.0	1.0	10000.0	3.00	45.
3500.	.9174	5	1.0	1.0	10000.0	3.00	45.
4000.	.7941	5	1.0	1.0	10000.0	3.00	44.
4500.	.6989	5	1.0	1.0	10000.0	3.00	45.
5000.	.6231	5	1.0	1.0	10000.0	3.00	42.
5500.	.5618	5	1.0	1.0	10000.0	3.00	45.
6000.	.5109	5	1.0	1.0	10000.0	3.00	45.
6500.	.4684	5	1.0	1.0	10000.0	3.00	45.
7000.	.4321	5	1.0	1.0	10000.0	3.00	43.
7500.	.4010	5	1.0	1.0	10000.0	3.00	41.
8000.	.3740	5	1.0	1.0	10000.0	3.00	39.
8500.	.3501	5	1.0	1.0	10000.0	3.00	37.
9000.	.3292	5	1.0	1.0	10000.0	3.00	36.
9500.	.3107	5	1.0	1.0	10000.0	3.00	45.
10000.	.2940	5	1.0	1.0	10000.0	3.00	45.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:

387.	11.55	5	1.0	1.0	10000.0	3.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	11.55	387.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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